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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,974	02/10/2006	T. Howard Killilea	160-P-1582USWO	7392

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EXAMINER	
NILAND, PATRICK DENNIS	
ART UNIT	PAPER NUMBER
1796	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/567,974	KILLILEA, T. HOWARD	
	Examiner	Art Unit	
	Patrick D. Niland	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/20/07 has been entered.

The amendment of 12/20/07 has been entered. Claims 1-37 are pending.

2. Claims 24 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. There is no antecedent basis in claims 24 or 1 for "the sulfonated polymer". It is therefore unclear if this refers to the sulfonated polyol or some other component. It is unclear what is intended by "derivative of 5-sulfo-isophthalic acid", particularly how much derivation may be done to achieve the claimed invention. For example is water, which is a pyrolysis derivative of this compound intended?

B. It is unclear what is intended by "polyurethane-polyethylene polymer" of claim 33. The claimed components do not require "ethylene". It is therefore unclear if this preamble is intended to require polyethylene or if any vinyl monomer combinations, including those that do not include ethylene are intended by the claim language.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat. No. 6166127 Tomko in view of US Pat. No. 5422392 Floyd et al. and US Pat. No. 4977207 Hoefer et al..

Tomko discloses the instantly claimed invention except for the instantly claimed VOC. See the entire document. It is noted that Tomko does not disclose a reactant falling within the scope of that of the instant claim 3. However, since the claim is directed to the polyurethane of the claimed composition and the urethane contains a moiety meeting the requirements of claim 3 (e.g. a smaller portion of the urethane containing sulfonate and ethylenic groups as well as perhaps other urethane groups) and the skilled artisan could not tell how said moiety got there while looking only at the final urethane, the polyurethane of the patentee falls within the scope of the instant claim 3. See MPEP 2112-2113. In other words the final product of the instant claims directed to the polyurethane per se is not distinguishable from that of the prior art do to this process-type/intermediate reactant limitation. It is the same issue regarding the recitation of "sulfonated polyol". The final polyurethane contains sulfonate groups, polyol moieties, isocyanate moieties, etc. The final urethane can be examined at a sulfonate group, which backbone chain can be followed to the closest two OH residues so as to give at least the appearance that the sulfonate was incorporated via a sulfonated polyol. Furthermore, the ordinary skilled artisan would understand that, since a polyurethane is the ultimate product, the sulfonate group discussed by Tomko at column 5, lines 9, which encompasses sulfonated diols, and column 5, line 65, which coupled with column 5, line 9 clearly encompasses sulfonated diols, the sulfonate group is intended to be incorporated by sulfonated diol which is a sulfonated polyol of the instant claims. It would also have been obvious to one of ordinary skill in the art at

the time of the instant invention to use the instantly claimed sulfonated polyol to incorporate the sulfonate groups of Tomko into their polyurethane because Hoefer shows this to be an equivalent method to the use of dimethylolpropionic acid at column 4, lines 6-12, Tomko clearly encompasses the use of sulfonated diols as discussed above, and their well known dispersing benefits would have been expected in the polyurethane of Tomko.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to use the instantly claimed VOC in preparing the product of Tomko because such VOCs will meet current regulations regarding VOC, eliminate expensive and dangerous organic solvents, and are a well known expedient in the making of aqueous urethanes as taught by Floyd et at al. which would have been expected to give the benefits of low VOC to the dispersions of Tomko. The motivation and understanding by the ordinary skilled artisan that VOC must and can be eliminated or minimized is thus within the state of the art at the time of the instantly claimed invention.

The applicant's argument "There is no teaching or suggestion in either Tomko or Floyd to modify or to combine their disclosures to obtain applicants' claims." is not persuasive as this is not required to make an obviousness rejection. In fact such a specific interpretation would almost necessarily require references to be anticipating to be able to make obviousness rejections. This is clearly not the case. The examiner maintains that the above rejection meets the requirements of Graham v. Deere and is consistent with the KSR International Co. v. Teleflex Inc., 550 U.S.---, 82 USPQ2d 1385 (2007) because the above rejection sets forth the state of the art as including the use of reduced VOC content in aqueous coating compositions which are similar in compositions to those of Tomko and the motivation to do so, which is

supported at columns 1-2 at least of Floyd. These benefits would clearly be seen in the composition of Tomko and no unexpected results commensurate in scope with the cited prior art and the instant claims are seen stemming from the difference in Tomko and the instant claims. The applicant's arguments have been fully considered but are not persuasive in view of the above rejection and reasons. This rejection is therefore maintained.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-23, 25, 29-32, and 34-37 are rejected under 35 U.S.C. 102(b) as being anticipated by US Pat. No. 5916965 Matsumoto et al.

Matsumoto discloses the instantly claimed inventions at the abstract and entire document which encompasses the instantly claimed compositions comprising polyurethanes having unsaturated groups and sulfonate groups from sulfonated polyols in the presence of vinyl monomers, which falls within the scope of the instant claims 1-23, 25, 29-32, and 34-37. The language of column 7, lines 39-41, particularly "can also be" and "if necessary" indicates that the compositions of Matsumoto do not require any VOC. Furthermore, the ordinary skilled artisan understands that that liquid vinyl monomers behave as "reactive diluents", a term that is well known and well defined in the prior art, which perform the function of VOC, thereby making VOC unnecessary. Column 4, lines 40-61 falls within the scope of the instant claims 4 and 20-23. The molecular weight of these sulfonated diacids coupled with the amount of sulfonate disclosed in the polyurethane falls within the scope of the instant claims 5-7. Column 6, line 27

et seq. falls within the scope of the instant claims 8-15. Column 6, line 46 et seq. falls within the scope of the instant claim 16. Column 5, lines 30-44 falls within the scope of the instant claims 17-19. Column 5, line 54-55 falls within the scope of the instant claims 25 and 29. Where no organic solvent is used, as is clearly encompassed by the reference, the instant claims 30-32 are met. The sulfonated polyols of the reference do not have ethylenic groups which meets the instant claims 2 and 36. The vinyl monomers are reacted to form a polymer which meets the instant claim 35. The instant claims 3 and 37 are directed to the composition per se, not the method of making it. The urethane of Matsumoto contains a moiety meeting the requirements of claim 3 (e.g. a smaller portion of the urethane molecule which contains sulfonate and ethylenic groups as well as perhaps other urethane groups meets the limitations of claims 3 and 37) and the skilled artisan could not tell how said moiety got there while looking only at the final urethane, the polyurethane of the patentee falls within the scope of the instant claim 3. See MPEP 2112-2113. In other words the final product of the instant claims 3 and 37, directed to the polyurethane per se, is not distinguishable from that of the prior art do to this process-type/intermediate reactant limitation.

7. Claims 1-32 and 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat. No. 5916965 Matsumoto et al.

Matsumoto discloses the instantly claimed inventions at the abstract and entire document which encompasses the instantly claimed compositions comprising polyurethanes having unsaturated groups and sulfonate groups from sulfonated polyols in the presence of vinyl monomers, which falls within the scope of the instant claims 1-23, 25, 29-32, and 34-37. The language of column 7, lines 39-41, particularly “can also be” and “if necessary” indicates that the

compositions of Matsumoto do not require any VOC. Furthermore, the ordinary skilled artisan understands that that liquid vinyl monomers behave as "reactive diluents", a term that is well known and well defined in the prior art, which perform the function of VOC, thereby making VOC unnecessary. Column 4, lines 40-61 falls within the scope of the instant claims 4 and 20-23. The molecular weight of these sulfonated diacids coupled with the amount of sulfonate disclosed in the polyurethane falls within the scope of the instant claims 5-7. Column 6, line 27 et seq. falls within the scope of the instant claims 8-15. Column 6, line 46 et seq. falls within the scope of the instant claim 16. Column 5, lines 30-44 falls within the scope of the instant claims 17-19. Column 5, line 54-55 falls within the scope of the instant claims 25 and 29. Where no organic solvent is used, as is clearly encompassed by the reference, the instant claims 30-32 are met. The sulfonated polyols of the reference do not have ethylenic groups which meets the instant claims 2 and 36. The vinyl monomers are reacted to form a polymer which meets the instant claim 35. The instant claims 3 and 37 are directed to the composition per se, not the method of making it. The urethane of Matsumoto contains a moiety meeting the requirements of claim 3 (e.g. a smaller portion of the urethane molecule which contains sulfonate and ethylenic groups as well as perhaps other urethane groups meets the limitations of claims 3 and 37) and the skilled artisan could not tell how said moiety got there while looking only at the final urethane, the polyurethane of the patentee falls within the scope of the instant claim 3. See MPEP 2112-2113. In other words the final product of the instant claims 3 and 37, directed to the polyurethane per se, is not distinguishable from that of the prior art do to this process-type/intermediate reactant limitation.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to use the instantly claimed combinations of ingredients in the compositions of Matsumoto because they are encompassed by Matsumoto, as discussed above, and would have been expected to give the properties to the final compositions of the compositions of Matsumoto.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to use the instantly claimed 5-sulfo-isophthalic acid of claim 24 in the sulfonated polyester polyol of Matsumoto because it is encompassed by column 4, lines 40-61, particularly lines 47-48 and would have been expected to give the function required by Matsumoto regarding increasing dispersion stability by the ionic nature of the neutralized sulfonate group.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to use the instantly claimed chain extenders of claims 26-28 in the polyurethane of Matsumoto because Matsumoto encompasses chain extension at column 5, line 55 and these are typically used chain extenders used in the polyurethane aqueous dispersion art and would have been expected to yield their usual properties to the polyurethane of Matsumoto.

8. Claim 33 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art does not disclose nor suggest the limitations required of the instant claim 33.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick D. Niland whose telephone number is 571-272-1121. The examiner can normally be reached on Monday to Thursday from 10 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Patrick D Niland/
Primary Examiner
Art Unit 1796